

November 6, 1998

Mr. R. P. Powers  
Senior Vice President  
Nuclear Generation Group  
American Electric Power Company  
500 Circle Drive  
Buchanan, MI 49107-1395

SUBJECT: D. C. COOK INSPECTION REPORT 50-315/98018(DRP); 50-316/98018(DRP)

Dear Mr. Powers:

On October 15, 1998, the NRC completed an inspection at your D. C. Cook Units 1 and 2 reactor facilities. The inspection was an examination of activities conducted under your license as they relate to compliance with the Commission rules and regulations and with the conditions of your license. Areas reviewed included Operations, Maintenance, Engineering, and Plant Support. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress. The enclosed report presents the results of that inspection.

Overall, the plant was operated in a safe manner. A negative trend of human performance errors was promptly identified by your staff. None of the human performance errors affected safe operation and prompt action was initiated to reverse the trend. Additionally, plant management demonstrated conservative decision making by reducing reactor coolant system pressure during extended operation with the Unit 1 west centrifugal charging pump out of service.

Continuing problems with the quality of engineering operability determinations and declarations demonstrated the need for additional improvement. Also, several events during this inspection period highlighted that the material condition of the plant continued to challenge the operators. The loss of reserve electrical feed, initiated by an aged underground cable, affected both units and resulted in the automatic start of emergency diesel generators. Continued attention to the follow through and correction of identified deficiencies is warranted.

No violations or deviations of NRC requirements were identified.

R. Powers

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In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and the enclosure will be placed in the NRC Public Document Room.

Sincerely,

Original signed by  
John A. Grobe

John A. Grobe, Director  
Division of Reactor Safety

Docket Nos.: 50-315; 50-316  
License Nos.: DPR-58; DPR-74

Enclosure: Inspection Report  
50-315/98018(DRP);  
50-316/98018(DRP)

cc w/encl: J. Sampson, Site Vice President  
R. Eckstein, Chief Nuclear Engineer  
D. Cooper, Plant Manager  
R. Whale, Michigan Public Service Commission  
Michigan Department of Environmental Quality  
Emergency Management Division  
MI Department of State Police  
D. Lochbaum, Union of Concerned Scientists

R. Powers

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/s/John A. Grobe

John A. Grobe, Director  
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D. Lochbaum, Union of Concerned Scientists

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-315; 50-316  
License Nos: DPR-58; DPR-74

Report No: 50-315/98018(DRP); 50-316/98018(DRP)

Licensee: Indiana and Michigan Power  
500 Circle Drive  
Buchanan, MI 49107-1395

Facility: Donald C. Cook Nuclear Generating Plant

Location: 1 Cook Place  
Bridgman, MI 49106

Dates: August 28, through October 15, 1998

Inspectors: B. L. Bartlett, Senior Resident Inspector  
B. J. Fuller, Resident Inspector  
J. D. Maynen, Resident Inspector

Approved by: B. L. Burgess, Chief  
Reactor Projects Branch 6

## EXECUTIVE SUMMARY

### D. C. Cook Units 1 and 2 NRC Inspection Report 50-315/98018(DRP); 50-316/98018(DRP)

This inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a 7-week period of resident inspection and includes the follow-up to issues identified during previous inspection reports.

#### Operations

- ! The operator response during the loss of reserve feed was methodical and conservative and resulted in the timely restoration of essential equipment. The degraded material condition of some station equipment continued to challenge the operators. Licensed operators demonstrated a nonconservative attitude when declaring the 2-AB-2 battery charger operable when the cause for the blown output fuse had not been determined (Section O1.2).
- ! Following an instantaneous overcurrent trip of the Unit 1 West Centrifugal Charging Pump the operating crew attempted to restart the motor. The restart was attempted even though an instantaneous overcurrent trip was a sign of significant damage to the electrical circuit and the annunciator response procedure required that no restart be attempted. A Non-Cited Violation was issued for the failure to follow the annunciator response procedure (Section O1.3).
- ! The inspectors concluded that the workaround review board's initial direction toward minimizing workarounds on the list to meet a goal did not meet the objective of the process as stated in the Plant Managers Instruction (PMI). After coaching by one member, the board conservatively considered items presented, and appropriately classified the deficiencies (Section O2.1).

#### Maintenance

- ! An apparent negative trend in human performance was identified by the licensee. Although the errors affected the operation of the plant, due to the current plant conditions, the safety significance of each error was low. The licensee has implemented corrective actions for this area (Section M1.1).

#### Engineering

- ! The inspectors concluded that an engineering memo used to help in an operability evaluation did not accurately reflect plant operating practice. Although the particular memo reviewed by the inspectors was not used to determine the operability of any Technical Specification related equipment, the inspectors concluded that the operability evaluation was non-conservative in that it did not account for expected operator actions (Section E4.1).

- ! In response to inspector questions on a sealed penetration through the side of the spent fuel pool which did not appear to be in compliance with design drawings the licensee identified an improperly closed Request For Change (RFC). The RFC had been in progress for some 20 years prior to closure, all design drawings were not updated to reflect as-built conditions, and the penetration was not properly resealed. The licensee's closure of the RFC was weak and incomplete. Pending the review of the corrective actions, this will remain open as an apparent violation (Section E4.2).

## **Report Details**

### **Summary of Plant Status**

Unit 1 remained in Mode 5, Cold Shutdown, during this inspection period. The licensee presented the schedule for restart of Unit 1 to the NRC on September 17, 1998. The schedule indicated that Unit 1 would be restarted in the first quarter of 1999.

Unit 2 remained in Mode 5, Cold Shutdown, during this inspection period. The restart schedule for Unit 2 was not yet complete.

## **I. Operations**

### **O1 Conduct of Operations**

#### **O1.1 General Comments (71707)**

Using the referenced inspection procedure, the inspectors conducted frequent reviews of control room and in-plant operation of equipment during the extended outage of both reactor units. During observations of control room activities such as shift turnovers, equipment operations and operator response to annunciators, the inspectors identified that control room operators monitored and operated equipment in a professional manner. Significant observations are discussed below:

- ! Early in this inspection period, the operators were challenged by the loss of one train of reserve feed in both units (detailed below in Section O1.2). Plant response to the loss of reserve feed included failure of a battery charger. Several idiosyncracies of the plant design also challenged the operators such as circulating water pumps that were powered from a train different than the associated pump's discharge valves, resulting in one backup circulating water pump running dead headed when it auto started after the loss of the operating pump.
- ! The failure of the Unit 1 west centrifugal charging pump motor resulted in a system configuration that did not include a backup pump to the operating pump. Licensee management conservatively decreased Unit 1 reactor coolant system pressure to minimize the risk of a degraded reactor coolant pump seal. A reactor coolant pump seal leak could challenge the ability of a single pump's capacity to maintain RCS inventory. The return of the replacement charging pump motor from a motor vendor was expedited. However, the licensee's work control system was not prepared to support the timely return of the pump to service due to a lack of communications among the work groups.
- ! Plant management delayed the depressurizing of the Unit 1 reactor coolant system, that was a prerequisite to the repair of various components, when it was



discovered that planning efforts had not been completed on time. Inadequate communications between operations, engineering and maintenance contributed to the delay. The managers for the key departments began meeting weekly to better coordinate the work planning and execution process.

! Challenges to the operators include many workarounds to existing deficiencies. The workaround board met to consider deficiencies for inclusion on the plant workaround list. Numerous workarounds were identified for the two units. The plant manager established a goal of four per unit. A review of the aggregate effect on the plant was performed and a significant negative effect was not identified.

! The licensee identified a number of human performance errors. The errors were by maintenance personnel and are discussed in Section M1.1. Although the individual errors represented a continuing challenge to the operation of the plant, none of the errors were safety significant.

### Conclusion

The inspectors concluded that material condition and workarounds, human performance errors, and work control problems continued to challenge plant operations. The licensee has implemented corrective actions for these areas, and the inspectors noted some improvement in licensee performance.

## O1.2 Loss of Reserve Electrical Feed (Both Units)

### a. Inspection Scope (71707)

Units 1 and 2 lost reserve electrical feed on August 31, 1998, due to an electrical fault in the switchyard. The inspectors responded to the control rooms, monitored the licensee's response actions and verified the operational status of vital equipment. The inspectors reviewed the following:

!	OHP-4022.001.005	Loss of Offsite Power with the Reactor Shutdown
!	CR 98-4574	Failure of Transformer #2 in the 765kV Switchyard

### b. Observations and Findings

#### Equipment Response

The #2 34.5/12 kV station service transformer (SST) failed resulting in an electrical transient. The #2 SST feeds service power to switchyard equipment. Differential current relays properly actuated and opened the upstream 12CD (34.5 kV) and the downstream reactor coolant pump buses (4160 volt) feed breakers. Load shed relays stripped the Train A (CD) 4160 volt buses in each unit, as designed. The CD diesel generators (D/Gs) in each unit automatically started after the load shed and powered the emergency 4160 volt buses.

### Material Condition of Station Equipment

The loss of reserve feed was caused by a fault in a degraded 12 kV underground cable in the switch yard. The plant response to the loss of reserve feed was slightly complicated by an inoperable Train B battery charger coupled with the opening of the output fuses of the operable Train B battery charger in Unit 2. The material condition of the equipment is discussed below.

The #2 34.5/12 kV SST failed due to an internal fault caused by excessive current drawn by a faulted underground 12 kV cable from the transformer to switchyard service loads. A new 34.5/12 kV transformer was installed to replace the blown transformer and the faulted cable was repaired by splicing.

The cable that failed was installed when the plant was originally constructed in the 1973 - 1974 period, making the cable about 25 years old. A fault in a similar 12 kV cable had previously caused a transformer failure in August 1996. Engineering department personnel stated that other 12 kV cable faults had occurred in the past but that no documentation existed to ascertain the number of failures. The expected life of the cables at installation was 30 years, but system experience had shown the actual life to be 20 - 25 years. The licensee had planned to replace the 12kV cables in 1999; however, after this failure, the replacement was given a higher priority and rescheduled for completion in 1998. Engineering department personnel stated that the small risk posed by continued operation with the aged cable, until the scheduled replacement, was acceptable in that previous failures had not adversely affected the onsite electrical distribution system.

In April 1998, the 2-AB-1 battery charger was declared inoperable but available, due to unexplained tripping of the charger supply breaker. Technical Specifications (TSs) only required one battery charger, battery and DC bus energized and operable in Mode 5. The TS requirement was met with the remaining operable 2-AB-2 charger. The inoperable 2-AB-1 charger, however, eliminated redundancy in the DC system.

The operable 2-AB-2 battery charger DC output fuses blew from overcurrent during the voltage transient caused by the ground fault of the 12kV cable. The response to the loss of the battery charger was complicated by the inoperability of the 2-AB-1 charger. With the 2-AB-2 battery charger connected to the AB battery, battery voltage decreased below 245 VDC, and the 2AB battery was declared inoperable. The available 2-AB-1 charger was connected to the AB battery to restore bus voltage; however, the 2-AB battery remained administratively inoperable due to not having an operable battery charger.

After testing, the 2-AB-2 battery charger was declared operable. The charger was connected to the AB battery and the battery declared operable. The declaration of operability, based on the maintenance testing and engineering evaluation concerning the 2-AB-2 battery charger, is discussed below.

### Operator Actions

As designed, the centrifugal charging (CCP) and residual heat removal (RHR) pumps did not automatically start after the load shed signal. The operators manually restarted the pumps from the control room to provide core inventory and shutdown cooling in accordance with the procedure for loss of offsite power with the reactor shutdown. The CCP and RHR pumps were restarted within two minutes. A small rise in reactor coolant system temperature occurred of approximately 0.1EF.

Both Units' CD D/Gs provided power for the Train A 4160 volt buses for approximately eight hours until reserve feed was restored. During this time, both Operations and Engineering department personnel walked down the 4160 volt distribution system to ensure that all breakers and relays that operated during the loss of reserve feed event were evaluated before restoring reserve feed.

A low voltage alarm for the 2-AB battery (Train B) was received when power was restored to Train A lighting. The low voltage alarm confused control room operators when they attempted to correlate the restoration of lighting on one train to the low voltage alarm on the opposite train. The operators subsequently determined that the low voltage alarm for the 2-AB battery was powered from lighting circuit CRP-1 (Train A). When Train A power was restored to lighting, the low voltage alarm for Train B battery was restored and the annunciator sounded, due to the existing low voltage on the AB battery.

The 2-AB-2 battery charger was declared operable by the control room crew after the blown DC output fuses were replaced, battery charger checks were performed and the AB battery surveillance was completed. The operability decision appeared to be based upon maintenance informing the operating crew that the equipment was operable, rather than the operators evaluating the available information and determining that the equipment was operable. A root cause evaluation to determine why the output fuses blew, prior to declaring the charger operable, was not performed. Approximately 24 hours later, after further consideration of battery charger status, the same control room crew declared the battery charger and associated battery inoperable until the root cause was determined. Licensee management was not informed of the operability decision until the next morning.

A lessons learned memo was issued to address the incorrect operability declaration. The issues addressed included:

- ! Declaring equipment operable without knowledge of the cause and documentation of the subsequent repair
- ! Failure to discuss key operability declarations with operations department management

- ! Basing operability declarations on information obtained from another department without assessing the information

The cause of the blown DC output fuse was the result of a unique set of circumstances concerning the timing of the voltage transient and the starting sequence of large DC loads. The fault on the 34.5kV bus caused a momentary drop in 600 VAC bus voltage. The battery chargers responded to the lowering input bus voltage by phasing the control circuitry silicon controlled rectifiers (SCRs) to maximum output to maintain DC output voltage. While the SCRs provided maximum output, several large DC loads started, coincident with the return of normal input voltage. As a result, the charger produced an output transient of sufficient magnitude to blow both semiconductor output fuses. The output fuses performed as designed and opened to protect the SCRs and other circuitry from overcurrent damage. Engineering personnel briefed the charger manufacturer on the timing and sequence of events. The charger manufacturer agreed with the conclusion of root cause reached by engineering personnel.

c. Conclusions

The operator response during the loss of reserve feed was methodical and conservative and resulted in the timely restoration of essential equipment. The degraded material condition of some station equipment continued to challenge the operators. Licensed operators demonstrated a nonconservative attitude when declaring the 2-AB-2 battery charger operable when the cause for the blown output fuse had not been determined.

O1.3 Trip and Attempted Restart of the West Centrifugal Charging Pump (CCP) (Unit 1)

a. Inspection Scope (71707)

The inspectors performed routine follow up to an unexpected trip of the West CCP. In addition, the inspectors performed follow up to the licensed operators attempt to restart the CCP even though the annunciator response procedure stated to not reclose the breaker.

Documents reviewed included:

- ! Condition Report 98-4625, Attempted restart of 1 West CCP
- ! 01- Operations Head Procedure 4024.109, Revision 6, Annunciator Response for Panel Number 109
- ! Control Room logs for September 3, 1998

b. Observations and Findings

On September 3, 1998, at 7:20 p.m. the Unit 1 West CCP tripped on instantaneous

overcurrent. The Reactor Operator (RO) announced to the control room personnel that the CCP had tripped, without stating the trip was due to instantaneous overcurrent. The Unit Supervisor (US) directed that a restart be attempted. The restart attempt was unsuccessful.

Operators were then dispatched to check the West CCP locally and to rack in the breaker to the East CCP. The East CCP was started and placed in service after its feeder breaker had been restored to service. The reactor was in Mode 5, at approximately 280 psig and an average temperature of 185 degrees. As required by TS 3.1.2.3 only one CCP (West) was available, the East CCP being out of service as part of cold overpressure protection requirements.

The licensee's apparent cause evaluation determined:

- ! The annunciators were not fully understood by the operating crew prior to attempting the restart of the pump. A sense of urgency was perceived by the operating crew and caused the operators to rush the restart attempt prior to reading all of the lit annunciators.
- ! The RO indicated that the CCP had tripped but did not announce to the control room personnel that the trip was due to instantaneous overcurrent. In addition, the US did not request additional detail on the trip prior to directing the restart attempt.
- ! The operating crew believed that the simulator scenarios which routinely used overcurrent trips may have set the crew up to assume that the trip was due to overcurrent. The annunciator response procedure for the overcurrent trip of the CCP allowed one restart attempt. The annunciator response procedure for the instantaneous overcurrent trip directed that a restart not be attempted.
- ! A contributing cause was the sense of urgency felt by the operating crew. If the Unit had been in Mode 1, at full power, the loss of the only available CCP would have represented an increase in the risk for the loss of a reactor coolant pump (RCP) seal. However, with the Unit in Mode 5, the loss of the only operable CCP did not represent an increase in the risk of damage to the RCP seals. Therefore, there was no actual urgency to either restart the West CCP or to restore the East CCP to operable.

The operating crew allowed an inappropriate sense of urgency to result in an attempt to restart a pump which had an instantaneous overcurrent trip. The instantaneous overcurrent trip was a sign of potentially significant damage to the electrical power to the pump and was reflected in the annunciator response procedure's direction to not reclose the breaker until the cause of the trip had been determined and corrected.

The inspectors concluded that the operators failure to comply with the annunciator response procedure for safety related equipment was a violation of 10 CFR Part 50, Appendix B, Criterion V, in that an activity affecting quality was not accomplished in accordance with a required procedure. This non-repetitive, licensee-identified and

corrected violation is being treated as a non-cited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-315/98018-02(DRP)).

The licensee's corrective actions included:

- ! Submitting a request to the training department to modify the simulator scenarios. The operators requested that the scenarios for the loss of a CCP include instantaneous overcurrent trips in addition to the normally utilized overcurrent trips. This would emphasize to the operators the need to double check the annunciators prior to attempting pump restarts.
- ! To have the crew involved spend time in the simulator practicing verbal communications. This corrective action would focus on the operators' need to communicate important information to the US and for the USs' need to request information from the operators.
- ! Issuing a lessons learned E-Mail to emphasize the need to look and analyze before acting.

The inspectors noted that the lessons learned E-Mail devoted significant effort to explaining the differences between an overcurrent trip and an instantaneous overcurrent trip. Questioning of operations management determined that some operators expressed the need for additional information on the differences between the two types of trips and of the potential damages to the motor under each kind of trip. This information was not listed in the causes for the event. Operations management determined that the information requested by the operators was nice to know but was not a major factor in the root cause of the attempted restart.

c. Conclusions

Following an instantaneous overcurrent trip of the Unit 1 West Centrifugal Charging Pump the operating crew attempted to restart the motor. A perceived sense of urgency by the crew resulted in a failure to read and understand all lit annunciators. The annunciator response procedure for an instantaneous overcurrent trip required that no restart be attempted. A Non-Cited Violation was issued for the failure to follow the annunciator response procedure.

**O2 Operational Status of Facilities and Equipment**

O2.1 Operator Workaround Board Meeting

a. Inspection Scope (71707) (Both Units)

The inspectors attended the quarterly meeting held to evaluate conditions identified as potential operator workarounds. The inspectors reviewed Plant Manager's Instruction (PMI) 4016, "Oversight and Control of Operator Workarounds."

b. Observations and Findings

The purpose of identifying operator workarounds, as stated in PMI 4016, was to reduce control room operator distractions and reduce control room resources needed to respond during transient conditions.

The assembled board was informed that the Plant Manager's goal for workarounds in Unit 1 at restart was four workarounds. As the review of deficiencies was undertaken, the inspectors perceived that the board attempted to avoid classifying the items as workarounds, in order to reduce the total number of workarounds in support of the Plant Manager's goal. One member of the board reminded the other members that the board's purpose was to use the guidance provided in PMI 4016 to determine the proper classification of deficiencies.

The board reviewed and classified four deficiencies as workarounds, with an additional eight deficiencies added to the watch list. The watch list is used to assess the aggregate impact of deficiencies of lesser significance. The board demonstrated a conservative attitude, following the reminder of the boards' charter, when considering deficiencies for inclusion on the lists.

As required by PMI 4016, a review of the lists for aggregate impact was performed. However, the inspectors noted that this review was performed outside of the meeting and as such, did not gain from discussion among the members. The workarounds board considered that there was no aggregate impact as a result of these deficiencies.

c. Conclusions

The inspectors concluded that the board's initial direction toward minimizing workarounds on the list to meet a goal did not meet the objective of the process as stated in the PMI. After coaching by one member, the workaround review board conservatively considered items presented, and appropriately classified the deficiencies.

## **O8 Miscellaneous Operations Issues**

- O8.1 (Closed) Licensee Event Report (LER) 50-316/94005-00: Unit 2 Reactor Trip on Low Feedwater Flow to Steam Generator #23 Coincident With Low SG Level as a Result of a Loss of Both Main Feedwater Pumps Due to Loss of Vacuum. The licensee investigated the trip and concluded that an influx of zebra mussels into the circulating water system blocked flow through the main feed pump condenser water box tubes, resulting in the west main feed pump tripping on a loss of vacuum. The LER (LER) stated that further strategies to inhibit zebra mussel growth would be evaluated. The inspectors toured the screen house and interviewed chemistry personnel about the licensee's current strategies for zebra mussel control. The licensee implemented a continuous chemical treatment program to inhibit zebra mussel growth in the essential service water and non-essential service water systems. Additionally, batch chemical treatment and divers remove zebra mussel accumulation on a twice per year schedule from the forebay and intake tunnels. The inspectors have not noted any further operational problems due to zebra mussel accumulation; therefore, this LER is closed.

- O8.2 (Closed) LER 50-316/96005-00: Unit Trip During Turbine Overspeed Testing. On May 8, 1996, during main turbine overspeed testing, Unit 2 unexpectedly tripped from 7 percent power. This event was discussed in detail in Inspection Report 50-315/96005; 50-316/96005. The plant responded as designed with a few minor exceptions, and the inspectors concluded that no violations of NRC requirements occurred. An issue concerning the receipt of spurious auxiliary feedwater flow retention signals was identified and is tracked under Inspection Follow-up Item 50-315/96005-01; 50-316/96005-01. This LER is closed.
- O8.3 (Closed) LER 50-315/98040-00: ESF Actuation and Start of Emergency Diesel Generators 1CD and 2CD Due to Faulted Underground Cable. On August 31, 1998, one bus of reserve feed power was lost to both units due to the failure of a station service transformer. This event is discussed in detail in Section O1.2 of this report. The LER did not identify any additional issues; therefore, this LER is closed.

## **II. Maintenance**

### **M1 Conduct of Maintenance**

#### **M1.1 General Comments**

##### **a. Inspection Scope (62707 and 61726)**

Portions of the following maintenance job orders, action requests, and surveillance activities were observed or reviewed by the inspectors:

- ! \*\*1 Engineering Head Procedure [EHP] 4030 STP.226 Reactor Coolant System [RCS] Pressure Isolation Valves Leak Rate Test, Revision 3
- ! \*\*12-OHP [Operations Head Procedure] 4021.007.003, "Auxiliary Systems Demineralizer Resin Sluicing and Replacement," Revision 3
- ! 01-OHP 4030.STP.027CD, "CD Diesel Generator Operability Test (Train A)," Revision 13
- ! Job Order C45626, 1-PP-9E [Unit 1 East Containment Spray Pump]; Disassemble/ Inspect Pump Internals
- ! Action Request (AR) A0167260, Investigate Breaker 2-BC-AB2-CB2 Not Tripping
- ! AR A0160070, 2-BC-AB1 Battery Charger Failed

##### **b. Observations and Findings**

During this inspection period a number of human performance errors were identified by the licensee. The errors involved different maintenance groups and are listed below:



- ! During a surveillance test an I & C technician inadvertently bumped a switch in the control room. The East Diesel Driven Fire Pump started and was subsequently manually shutdown by the control room operators. The I & C technician was acknowledging annunciators and due to the extended nature of his duties had placed a chair in close proximity to the control panel. Eventually, rather than stand up to respond to each annunciator, the technician simply leaned up and over the fire pump hand switch.

The technician performing the annunciator responses was seen and observed by the operating crew. However, the technician's poor work practices were not corrected by the operating crew.

- ! During the placement of scaffolding for a planned work activity, workers inadvertently bumped two manual valves. The valves were closed for a clearance activity, and the bumping opened them a portion of a turn. During routine control room observations the Unit 1 Reactor Operator observed that the Middle Boric Acid Storage Tank (BAST) level had increased approximately 4 percent and its temperature had decreased about 5 degrees.

The RO directed that an AEO check the BAST areas locally, and the AEO found that the primary water inlet valves were cracked open. A chemistry sample showed that the boron concentration of the tank had dropped to 19,300 ppm which was below the TS requirement. The BAST had previously been removed from service for maintenance, so no TS requirements were violated.

- ! During the removal of floor grating for maintenance a control air line was broken. The air line failure caused residual heat removal valve 1- IRV-311 (bypass around the RHR heat exchanger) to fail open. Due to the low decay heat removal requirements, most RHR shutdown cooling flow was already bypassed around the heat exchangers. Thus, the opening of the bypass valve did not result in any challenge to core cooling.

- ! During a routine tour of containment the licensee identified that the sensing line to the containment Channel 1 pressure protection transmitter was damaged. The transmitter provides signals to the safety injection and containment spray logic. The damage appeared to be caused by a worker stepping on the copper line which resulted in the line being pinched closed.

The inspectors had observed an apparent negative trend in human performance and began questioning licensee corrective actions. During a meeting with licensee management, the Plant Manager brought up the listed human performance errors and also discussed several other recent errors. The Plant Manager stated that the errors were unacceptable and that corrective actions were being initiated.

c. Conclusions

An apparent negative trend in human performance was identified by the licensee. Although the errors affected the operation of the plant, due to the current plant conditions, the safety significance of each error was low. The licensee had implemented corrective actions for this area.

**M3 Maintenance Procedures and Documentation**

**M3.1** Closure of a Surveillance Testing Item

As part of the plant restart effort docketed in the Restart Plan, the licensee has committed to performing a complete assessment of the surveillance testing program and implementing actions to correct the identified deficiencies. The NRC informed the licensee that an oversight panel had been established in accordance with NRC Inspection Manual Chapter (MC) 0350, and a checklist was enclosed in a letter dated July 30, 1998, which specified activities which the NRC considered necessary to be addressed prior to restart. Enclosure 1 to the July 30, 1998, letter, the Case Specific Checklist, included the programmatic breakdown in surveillance testing as an item to be addressed prior to restart. In accordance with MC 0350, an inspection plan was developed to evaluate the effectiveness of the licensee's actions to correct the items listed on the Case Specific Checklist.

Previous inspection activities have also identified specific discrepancies in the surveillance testing program. The inspectors reviewed these previously identified surveillance deficiencies and concluded that the licensee's restart effort and the MC 0350 evaluation of the programmatic issues will adequately assess the corrective actions for the specific, previously identified items. Therefore, the following item is closed and will be tracked as part of the MC 0350 evaluation process.

- ! (Closed) Inspection Follow-up Item 50-315/96006-17; 50-316/96006-17: Boric acid surveillance procedure weak. The inspectors considered the weekly boric acid surveillance procedure to be weak because it did not provide acceptance criteria for maximum system temperatures or guidance for dealing with high temperatures. Based on the discussion in Section M3.1, the inspectors reviewed this item and concluded that the issues raised by this Inspection Follow-up Item will be evaluated as part of the inspection effort to close MC 0350 Case Specific Checklist Item 1. This item is closed.

**M7 Quality Assurance in Maintenance Activities**

## M7.1 Closeout of Corrective Action Program Items

NRC and licensee inspection activities have identified a breakdown in the licensee's corrective action program. As part of the plant restart effort docketed in the Restart Plan, the licensee has committed to performing a complete assessment of the corrective action program and implementing actions to correct the identified deficiencies. Enclosure 1 to the July 30, 1998, letter, the Case Specific Checklist, included the programmatic breakdown in corrective action process as an item to be addressed prior to restart. In accordance with MC 0350, an inspection plan was developed to evaluate the effectiveness of the licensee's actions to correct the items listed on the Case Specific Checklist.

Previous inspection activities have also identified specific discrepancies in the corrective action program. The inspectors reviewed these previously identified corrective action deficiencies and concluded that the licensee's restart effort and the MC 0350 evaluation of the programmatic issues will adequately assess the corrective actions for the specific, previously identified items. Therefore, the following items are closed and will be tracked as part of the MC 0350 evaluation process.

- ! (Closed) Violation 50-315/95009-02; 50-316/95009-02: Failure to make reports required by 10 CFR 50.72. The inspectors identified four examples of a failure to make a report 10 CFR 50.72. The licensee's response stated that the violation was due to a weakness in the evaluation of events and conditions. Specifically, Plant Manager's Procedure 7030.001.001, "Prompt NRC Notification," was revised to include specific details for determining the reportability of Engineered Safety Features actuations and TS 3.0.3 entries. The inspectors reviewed the licensee's response and determined that the specific conditions identified in the violation had been adequately addressed. Based on the discussion in Section M7.1, the inspectors concluded that the licensee's corrective actions for the root causes this violation will be evaluated as part of the inspection effort to close MC 0350 Case Specific Checklist Item 2. This item is closed.
- ! (Closed) Violation 50-315/96006-02; 50-316/96006-02: Untimely identification and resolution of conditions adverse to quality. The inspectors identified four examples of conditions adverse to quality which were not promptly identified and corrected. The licensee's response to the violation included a commitment to communicate management's expectations for promptly reporting conditions adverse to quality. Based on the discussion in Section M7.1, the inspectors reviewed this item and concluded that the issues raised by this Inspection Follow-up Item will be evaluated as part of the inspection effort to close MC 0350 Case Specific Checklist Item 2. This item is closed.
- ! (Closed) Inspection Follow-up Item 50-315/96006-04; 50-316/96006-04: Audit and surveillance findings appear to be programmatic. Selected quality assurance (QA) audits and surveillances related to each functional area were reviewed. Many of the audit and surveillance findings appeared to be programmatic in nature and fairly narrow in scope. The inspectors observed

that, since many QA findings were programmatic in nature and narrowly scoped, line organization responses also tended to be program oriented and narrowly focused. Based on the discussion in Section M7.1, the inspectors reviewed this item and concluded that the issues raised by this Inspection Follow-up Item will be evaluated as part of the inspection effort to close MC 0350 Case Specific Checklist Item 2. This item is closed.

- ! (Closed) Inspection Follow-up Item 50-315/96006-05; 50-316/96006-05: Large number of condition reports were assigned generic root cause. The inspectors observed that, in general, it appeared that condition report (CR) causal determinations associated with issues not requiring a formal root cause evaluation under the licensee's program were more narrowly focused, did not address potential generic aspects in many cases, and sometimes contributed to inadequate corrective action. Also, the inspectors noted that a substantial number of CR causal codes were generically categorized as "Indeterminate," or "Other." The licensee agreed that by assigning large numbers of CRs to such generic categories resulted in little trend value added. Discussions with plant management and supervisory personnel revealed that much of the trending information generated on a routine basis was of questionable use in identifying real time trends early. Based on the discussion in Section M7.1, the inspectors reviewed this item and concluded that the issues raised by this Inspection Follow-up Item will be evaluated as part of the inspection effort to close MC 0350 Case Specific Checklist Item 2. This item is closed.
  
- ! (Closed) Inspection Follow-up Item 50-315/96006-06; 50-316/96006-06: No program to preclude revision or elimination of corrective actions by the line organization. Once corrective actions were implemented under the self-assessment process, including tacit acceptance through the QA audit interface, the inspectors noted a lack of programmatic controls that would preclude subsequent revision or elimination of the corrective actions by the line organization. Based on the discussion in Section M7.1, the inspectors reviewed this item and concluded that the issues raised by this Inspection Follow-up Item will be evaluated as part of the inspection effort to close MC 0350 Case Specific Checklist Item 2. This item is closed.
  
- ! (Closed) Violation 50-315/96013-03; 50-316/96013-03: Failure to take corrective actions. The inspectors identified three examples of untimely corrective actions: Action request tags were not always placed on equipment which had identified deficiencies; corrective actions to address potentially inaccurate sight-glass fill marks on safety-related pumps and motors were not promptly initiated; and the licensee had failed to either locate or reconstitute a net positive suction head calculation for a centrifugal charging pump in a timely manner. The inspectors reviewed the licensee's response and determined that the specific conditions identified in the violation had been adequately addressed. Based on the discussion in Section M7.1, the inspectors reviewed this item and concluded that the licensee's corrective actions for the root causes this violation will be evaluated as part of the inspection effort to close MC 0350 Case Specific Checklist Item 2. This item is closed.

- ! (Closed) Violation 50-315/97004-03; 50-316/97004-03: Failure to make timely 10 CFR 50.72 report. The inspectors identified that the licensee had failed to report that Unit 1 safety-related equipment was inoperable after damaged flood up tubes were identified in both Units' containments; however, a report was made regarding the Unit 2 equipment. The licensee's response stated that the violation was due to the low emphasis placed on the resolution of an indeterminate reportability question, particularly since Unit 2 was operating, but Unit 1 was shut down at the time the damaged flood up tubes were identified. The licensee revised Plant Manager's Procedure 7030.001.001 to require reporting issues to the NRC if there is no reasonable expectation that the issue will not be reportable. The inspectors reviewed the licensee's response and determined that the specific conditions identified in the violation had been adequately addressed. Based on the discussion in Section M7.1, the inspectors reviewed this item and concluded that the licensee's corrective actions for the root causes this violation will be evaluated as part of the inspection effort to close MC 0350 Case Specific Checklist Item 2. This item is closed.

## **M8 Miscellaneous Maintenance Issues**

- M8.1 (Closed) LER 50-315/94002-00: High Neutron Flux Setpoints for Operation at Reduced Power Levels With Inoperable MSSVs Not Low Enough to Preclude Secondary Side Overpressurization. On March 9, 1994, the licensee determined that the potential safety issue identified in Nuclear Safety Advisory Letter (NSAL) 94-001, Operation at Reduced Power Levels with Inoperable Main Steam Safety Valves (MSSVs), was reportable. The NSAL reported that the Final Safety Analysis Report loss of load/turbine trip event may not be bounding for the allowable operating configuration of TS Table 3.7-1 since the high neutron flux trip setpoint may not be low enough to preclude a secondary side overpressurization. On June 28, 1996, TS Amendments 210 (Unit 1) and 195 (Unit 2) were issued which revised the Table 3.7-1 high neutron flux trip setpoint to a lower value based on a new vendor methodology. The NRC concluded that the new setpoints provided a greater margin to safety. The inspectors reviewed the LER and the TS Amendments; no new issues were identified. This LER is closed.
- M8.2 (Closed) Inspection Follow-up Item 50-315/94002-05; 50-316/94002-05: Failure of MSSV to lift within acceptance criteria. The licensee has had historical problems with main steam safety valves (MSSVs) lifting at pressures above the setpoints. The licensee postulated that bonding between the seat and disc was causing the valves to lift at higher pressures. Licensee Event Report 50-315/95002 was issued to discuss the actions taken to determine the correct testing interval on the MSSVs to prevent disc to seat bonding. This issue will be tracked under the more recent LER; therefore, this item is closed.
- M8.3 (Closed) LER 50-315/94003-00: Main Steam Safety Valve Inaccuracy Due to Miscalculation of Valve Seat Area by Vendor. On March 11, 1994, the licensee received a letter from the main steam safety valve (MSSV) testing vendor which reported that the mean seat area constant used to calculate MSSV lift setpoints was in error. The seat area error resulted in the MSSV lift setpoints being one to three percent higher than those previously determined. The MSSV setpoints were reset to within  $\pm 1$

percent using the actual effective seat area. On September 9, 1994, TS Amendment 182 (Unit 1) and 167 (Unit 2) increased the main steam safety valve setpoint tolerance for both units to  $\pm 3$  percent. The licensee demonstrated that, with the increase in the MSSV setpoint tolerance, the affected Updated Final Safety Analysis Report analyses of record remained within the acceptance criteria. This LER is closed.

- M8.4 (Closed) LER 50-315/94010-00: Missed Containment Personnel Access Door Surveillance Due to Inadequate Administrative Controls. This event was discussed in detail in Inspection Report 50-315/94014; 50-316/94014. Technical Specification 4.6.5.5.2 required, in part, that the personnel access doors between the containment's upper and lower compartments shall be determined operable by visual inspection of the seals and sealing surfaces of these penetrations prior to the final closure of the penetration each time it has been opened. Contrary to the above, on May 2, 1994, the licensee was unable to demonstrate if surveillances for the Unit 1 containment personnel access doors between upper and lower containment were completed prior to changing from Mode 5 (Cold Shutdown) to Mode 4 (Hot Shutdown). On May 24, 1994, the hatches were demonstrated to be operable. The corrective actions documented in the LER appeared adequate to prevent recurrence, and the inspectors did not identify any similar occurrences. The failure to do the required seal and sealing surface inspection was considered a violation of TS 4.6.5.5.2. This non-repetitive, licensee-identified and corrected violation is being treated as a non-cited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-315/98018-03(DRP)). This LER is closed.
- M8.5 (Closed) LER 50-315/94010-00: Missed Containment Personnel Access Door Surveillance Due to Inadequate Administrative Controls. This event was discussed in detail in Inspection Report 50-315/94014; 50-316/94014. Technical Specification 4.6.5.5.2 required, in part, that the personnel access doors between the containment's upper and lower compartments shall be determined operable by visual inspection of the seals and sealing surfaces of these penetrations prior to the final closure of the penetration each time it has been opened. Contrary to the above, on May 2, 1994, the licensee was unable to demonstrate if surveillances for the Unit 1 containment personnel access doors between upper and lower containment were completed prior to changing from Mode 5 (Cold Shutdown) to Mode 4 (Hot Shutdown). On May 24, 1994, the hatches were demonstrated to be operable. Data Sheet 2 of Operations Head Procedure (OHP) 4030.001.002, "Containment Inspection Tours," required that the access doors separating containment upper and lower volumes be documented and verified prior to raising reactor coolant system temperature above 200°F. The inspectors concluded that these corrective actions appeared adequate to prevent recurrence, and the inspectors did not identify any similar occurrences. The failure to perform the required seal and sealing surface inspection was considered a violation of TS 4.6.5.5.2. This non-repetitive, licensee-identified and corrected violation is being treated as a non-cited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-315/98018-01(DRP)). This LER is closed.

### III. Engineering

#### **E4 Engineering Staff Knowledge and Performance**

##### **E4.1 Operability Evaluation for Emergency Diesel Generator Fuel Line Leaks (Both Units)**

###### **a. Inspection Scope (37551)**

Inspection Report 50-315/97018; 50-316/97018 documented several through-wall failures of the high pressure fuel lines on the 2 AB emergency diesel generator (2 AB D/G). On September 2, 1998, the 1 CD D/G developed a leak on a high pressure fuel line during a surveillance run. The inspectors reviewed the condition report and subsequent operability evaluation for the 1 CD D/G.

###### **b. Observations and Findings**

In the initial operability evaluation documented in the condition report, the Operations Shift Manager concluded that the 1 CD D/G was inoperable due to the fuel line leak. No TS violations occurred, however, because in Mode 5, only one of two D/Gs was required to be operable. A priority action request was written, the high pressure fuel line was replaced, and the 1 CD D/G was declared operable following a successful surveillance run. A backup operability evaluation on the 1 CD D/G was performed to support the fuel line replacement.

The backup operability evaluation documented that the 1 CD D/G was operable up to a 50 percent leak on a single high pressure fuel line ( $\frac{1}{2}$  the fuel in the line was leaking out). The evaluation discussed two cases of high pressure fuel line leaks: inside and outside the fulcrum box. For leaks outside the fulcrum box, the evaluation stated that a particular leak condition would have to be evaluated, and compensatory measures taken, if it became necessary to operate with a leak. For leaks inside the fulcrum box, the evaluation stated that the concern would be lubricating oil dilution with fuel oil.

The evaluation concluded that at a 50 percent leak rate, the lubricating oil would reach the 10 percent dilution limit within 6 hours. The operability evaluation concluded that all four D/Gs were operable based on the infrequency of fuel line leaks and the compensatory actions that could be taken in the unlikely event of a leak occurring during an accident condition. However, no compensatory actions were identified in the operability evaluation, and no methods for the operators to determine fuel leak percentage or lubricating oil dilution were given.

The inspectors reviewed the backup operability evaluation and questioned several operations shift managers about the actions they expected their crews to take if a fuel line leak was identified on a D/G. The shift managers stated that they expected the operators to use their best judgement and trip the D/G if a fire hazard existed. The shift managers also stated that they expected the operators' threshold for tripping the diesel to be higher during an accident condition, but they still expected the operators to trip the D/G if a fire hazard existed. The system engineer added that regardless of the backup operability determination conclusions, in actual practice, a D/G was always

considered inoperable until a leaking high pressure fuel line was repaired, as was the case with the 1 CD D/G.

The inspectors discussed the operability evaluation with the system engineer and plant management. The inspectors stated that the operability evaluation did not accurately reflect plant operating conditions because it was impossible to know at what leak percentage any particular operator would trip a D/G. The operability evaluation did not provide guidance or limitations to the operators. The system engineer stated that the operability evaluation would be reviewed against plant operating expectations and modified as necessary.

c. Conclusions

The inspectors concluded that an engineering memo used to help in an operability evaluation did not accurately reflect plant operating practice. Although the particular memo reviewed by the inspectors was not used to determine the operability of any TS related equipment, the inspectors concluded that the operability evaluation was non-conservative in that it did not account for expected operator actions.

E4.2 Improperly Closed Request For Change (Both Units)

a. Inspection Scope (37551 and 71707)

During a routine tour of the licensee's facility the inspectors identified a sealed penetration which did not appear to be in conformance with the licensee's design drawings. The inspectors performed routine follow up of the penetration and subsequent findings.

b. Observations and Findings

On October 5, 1998, during a routine tour of the facility, the inspectors developed a question on a penetration through the side of the spent fuel pool. The 4-inch diameter penetration was above the water line about 3 feet from the top of the pool and was sealed with a block of wood. It was also partially covered with duct tape. After initial questioning, licensee personnel informed the inspectors that the penetration had been used for testing. Following additional questioning, the licensee determined the penetration was from a modification that had been canceled after being partially completed. The licensee also determined that there was another plugged penetration similar to the one identified by the inspectors.

Request for Change (RFC) -12-936 had been initiated in 1976 to add protection to the spent fuel pool in the event a shipping cask was dropped. As spent fuel was not shipped offsite and was not likely to be shipped offsite for some time, work on the Cask Drop Protection System (CDPS) had not made significant progress. In 1996, the CDPS was canceled and preparations were made to issue a Notice of Cancellation.



On February 18, 1997, the Notice of Cancellation was issued for the CDPS. The Notice of Cancellation listed field work which had made changes to plant equipment. Item 7 stated, "Two 4" diameter holes were core drilled through the Spent Fuel Pit wall in the southwest corner approximately 3' below the top of the pool, one through the east wall and one through the south wall." The Notice of Cancellation went on to state, "... all changes have been in effect for the last 20 years without problem. Therefore no actions are required to change these modifications back to their original states."

To complete the closeout of the CDPS a number of plant drawings were required to be updated. The drawing showing the 4-inch diameter penetrations were not listed on the drawings requiring updates. Thus, the penetrations were not properly sealed nor were they shown on permanent plant drawings.

The licensee initiated Condition Report 98-5456 and began corrective actions. The safety significance of the failure to update the drawings and to place an appropriate plug in the penetration was minor. The lower of the two holes was approximately 1' 2" above the high level alarm of the spent fuel pool making the spill of spent fuel pool water through this pathway unlikely. If water had spilled it would have gone into the fuel handling area crane bay and not threatened safety related equipment.

The licensee's closure of the RFC was weak, incomplete, and showed poor engineering practices. In addition, there was a failure to follow engineering procedures which required that safety related drawings be updated to reflect the as-built configuration. At the end of the report period the licensee's proposed corrective actions were still being formulated. The inspectors will follow the licensee's evaluation and proposed corrective actions in a subsequent report. This issue, which may represent a violation of 10 CFR 50, Appendix B, Criterion III, Design Control, will remain open as an apparent violation for a reasonable time to allow the licensee to develop its corrective actions (EEI 50-315/98018-01; 50-316/98018-01(DRP)).

c. Conclusions

The licensee identified an improperly closed Request For Change (RFC) in response to inspector questions on a sealed penetration through the side of the spent fuel pool which did not appear to be in compliance with design drawings. The RFC had been in progress for some 20 years prior to closure, all design drawings were not up-dated to reflect as-built conditions, and the penetration was not properly resealed. The licensee's closure of the RFC was weak, incomplete, and showed poor engineering practices. Pending the review of the corrective actions, this will remain open as an apparent violation.

**E8 Miscellaneous Engineering Issues**

- E8.1 (Closed) LER 50-316/97006-00: Equipment in Containment Rendered Inoperable Due to Faulted Flood Up Tubes. In March, 1997, during a Unit 1 refueling outage, the licensee identified three flood up tubes with through wall failures. The licensee expanded the scope of the investigation to include all of the Unit 1 and Unit 2 flood up tubes and found a total of 11 damaged flood up tubes. This event was discussed in

detail in Inspection Reports 50-315/97008; 50-316/97008 and 50-315/97010; 50-316/97010. A minor violation was documented. The LER did not report any additional issues; therefore, this LER is closed.

#### **IV. Plant Support**

##### **R1 Conduct of Radiation Protection and Chemistry (71750)**

During normal resident inspection activities, routine observations were conducted in area of radiation protection and chemistry using Inspection Procedure 71750. No discrepancies were noted.

##### **S1 Conduct of Security and Safeguards Activities (71750)**

During normal resident inspection activities, routine observations were conducted in the area of security and safeguards activities using Inspection Procedure 71750. No discrepancies were noted.

##### **F1 Control of Fire Protection Activities (71750)**

During normal resident inspection activities, routine observations were conducted in the area of fire protection activities using Inspection Procedure 71750. No discrepancies were noted.

##### **X1 Exit Meeting**

The inspectors presented the inspection results to members of the licensee management after the conclusion of the inspection on October 19, 1998.

## PARTIAL LIST OF PERSONS CONTACTED

### Licensee

- # G. Arent, Nuclear Licensing
- # K. Baker, Manager, Production Engineering
- # A. Barker, Maintenance
- # J. Carlson, Environmental Affairs
- # D. Cooper, Plant Manager
- #MB. Depuydt, Nuclear Licensing Supervisor
- # E. Eckstein, Chief Nuclear Engineer
- # M. Finissi, Electrical and Auxiliary Systems Engineering
- # R. Gillespie, Work Control Manager
- # C. Gilmore, Asst Work Control
- # MB Greendonner, Protection
- # D. Hafer, Plant Engineering Manager
- # D. Kosloff, Nuclear Licensing
- # D. Kunsemiller, Regulatory Affairs
- # D. Morey, Business Performance
- # D. Noble, Radiation Protection/ Chemistry Superintendent
- # T. O'Leary, Performance Assurance
- # F. Pisarsky, Performance Engineering
- # R. Powers, Senior Vice President
- # J. Sampson, Site Vice-President
- # P. Schoepf, Supervisor, Safety-Related Mechanical Systems
- # M. Skow, Performance Assurance
- # L. Van Ginhoven, Materials Management
- # A. Verteramo, Production Engineering
- # T. Wagoner, Restart Manager
- # W. Walschot, Corrective Action Program Manager
- # L. Weber, Operations Manager
- # B. Zemo, Engineering

# Denotes those present at the October 19, 1998, exit meeting.

## INSPECTION PROCEDURES USED

IP 37551	Onsite Engineering
IP 61726	Surveillance Observations
IP 62707	Maintenance Observation
IP 71707	Plant Operations
IP 71750	Plant Support Activities
IP 92700	Onsite Review of LERs

## ITEMS OPENED, CLOSED, AND DISCUSSED

### ITEMS OPENED

50-315/98018-01 50-316/98018-01	EEI	Improperly Closed Request for Change
50-315/98018-02	NCV	Failure to follow annunciator response procedure
50-315/98018-03	NCV	Missed containment personnel access door surveillance due to inadequate administrative controls

### ITEMS CLOSED

50-315/94002-00	LER	High neutron flux setpoints for operation at reduced power levels with inoperable MSSVs not low enough to preclude secondary side overpressurization
50-315/94002-05 50-316/94002-05	IFI	Failure of MSSV to lift within acceptance criteria
50-315/94003-00	LER	Main steam safety valve inaccuracy due to miscalculation of valve seat area by vendor
50-316/94005-00	LER	Unit 2 reactor trip on low feedwater flow to steam generator #23 coincident with low SG level as a result of a loss of both main feedwater pumps due to loss of vacuum
50-315/94010-00	LER	Missed containment personnel access door surveillance due to inadequate administrative controls
50-315/95009-02 50-316/95009-02	VIO	Failure to make reports required by 10 CFR 50.72
50-316/96005-00	LER	Unit trip during turbine overspeed testing
50-315/96006-02	VIO	Untimely identification and resolution of conditions adverse

50-316/96006-02		to quality
50-315/96006-04 50-316/96006-04	IFI	Audit and surveillance findings appear to be programmatic
50-315/96006-05 50-316/96006-05	IFI	Large number of condition reports were assigned generic root cause
50-315/96006-06 50-316/96006-06	IFI	No program to preclude revision or elimination of corrective actions by the line organization
50-315/96006-17 50-316/96006-17	IFI	Boric acid surveillance procedure weak
50-315/96013-03 50-316/96013-03	VIO	Failure to take corrective actions
50-315/97004-03 50-316/97004-03	VIO	Failure to make timely 10 CFR 50.72 report
50-316/97006-00	LER	Equipment in containment rendered inoperable due to faulted flood up tubes
50-315/98018-02	NCV	Failure to follow annunciator response procedure
50-315/98018-03	NCV	Missed containment personnel access door surveillance due to inadequate administrative controls
50-315/98040-00	LER	ESF actuation and start of emergency diesel generators 1CD and 2CD due to faulted underground cable

## LIST OF ACRONYMS

AEP	American Electric Power
AR	Action Request
bcc	blind carbon copy
cc	carbon copy
CFR	Code of Federal Regulations
CR	Condition Report
DCC	Donald C. Cook
D/G	Emergency Diesel Generator
DRP	Division of Reactor Projects
DPR	Demonstration Power Reactor
EDT	Eastern Daylight Time
EEI	Apparent Violation
ESF	Engineered Safety Feature
IFI	Inspector Followup Item
IR	Inspection Report
JO	Job Order
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MI	Michigan
NVC	Noncited Violation
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
OHI	Operations Head Instruction
PMI	Plant Manager's Instruction
PMP	Plant Manager's Procedure
PPA	Plant Performance Assurance
PDR	Public Document Room
QC	Quality Control
RG	Regulatory Guide
ROC	Restart Oversight Committee
RWP	Radiation Work Permit
STP	Surveillance Test Procedure
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VIO	Violation